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LETTERS TO THE EDITOR.

Osteology of the cormorant.

I WOULD make a couple of corrections to the article on the osteology of the cormorant in SCIENCE for Nov. 16.

First, the occipital style is figured as pointing upwards and backwards, and is spoken of as figured *in situ* for the first time. Having made several dissections of cormorants in past years, I would suggest that the bone is the ossified tendon of some of the extensor muscles of the neck, and that it points backwards, and, if any thing, downwards, as figured by Selenka (Bronn's Thierreichs, Vögel, figs. 5, 6, pl. viii.). As drawn in SCIENCE, it would project through the skin of the nape.

Secondly, the patella is spoken of as very large and as throwing "some light on such birds as Colymbus and Podiceps, where this bone becomes ankylosed with the tibia in the adult," and Professor Owen is referred to as authorizing this statement. Now, Professor Owen describes the patella as "co-existing with the long rotular process in the loon" (Comp. Anat., ii. 83), and figures it as distinct from the process in fig. 34, l. In fact, the rotular process was regarded as the ankylosed patella until the time of Nitzsch. This celebrated ornithologist pointed out the co-existence of an enormous patella and rotular process in Podiceps, and showed the true nature of the process ('Osteogr. beitr. zur nat. der vögel,' Leipzig, 1811, pp. 98-101, pl. ii., figs. 13, 14). In fact, the rotular process of the divers is exactly the same in nature as in other birds, differs only in size, and in no wise represents the *co-existing* patella. In position and function the rotular process resembles the olecranon.

J. AMORY JEFFRIES.

Sense of direction.

Professor Newcomb's paper in SCIENCE of Oct. 26 opens an exceedingly interesting, if not a very important subject. It has exacted of me a good deal of thought, and this capricious sense has been a source of no little annoyance. I should like to give a little of my experience. With me the co-ordinates almost invariably revolve 180°. When a boy, I studied geography, and when at recitation sat with my face to the north. I thus had the whole world mapped out in my mind to correspond with my proper sense of the directions. Soon after this, my father moved to a new home; and there I found, to my great annoyance, that my co-ordinates had revolved 180°. My geography was in the greatest confusion. When I began to travel, I found that the co-ordinates would change in the most unexpected manner, first one way, and then the other. I could not trust my sense of direction.

When I came to Lebanon, I found myself with my original boyhood co-ordinates. I graduated, and went back to Arkansas. Upon my return to Lebanon a few months afterwards, the directions had revolved 180°, and I found myself practically in a new town. I had to learn it all over again; and to-day, if I desire to point to the north, my hand instinctively moves towards the south. In travelling I have found it useful to trust as little as possible to the sense, and be guided by the map. In an extended tour through Europe, I was in the habit of preparing myself, before entering each city, by a careful study of its map, — noting the position of the railway-station, direction of the streets, etc. In this manner I was enabled to control the sense of direction. In only one or two instances did I fail to keep the directions right.

I make two practical suggestions:—

1. Students in geography should always sit with their faces to the north.

2. Travellers should prepare themselves, before entering a new place, by a previous subjective arrangement of the directions they are to find there.

J. I. D. HINDS.

Cumberland university, Lebanon, Tenn.

Synchronism of geological formations.

In SCIENCE of Nov. 16, weekly summary, under above heading, Professor A. Heilprin is reported as having called attention to two conclusions of Huxley's on this subject, and to have maintained, that while the first-mentioned conclusion could be logically disproved, and the second derived no confirmation from the supposed facts, the opinion of the older geologists, that geological contemporaneity is equivalent to chronological synchronism, was therefore probably correct.

Professor Huxley, in his presidential address to the Geological society for 1862, supported the conclusions called in question by reasoning, which, so far as I know, has yet to be shown to be illogical. Neither am I aware, that, during the twenty-one years which have since elapsed, geological or paleontological research has tended otherwise than to maintain the logical basis on which he then rested.

If Professor Heilprin will but do what he is reported to claim can be done, he will earn the gratitude of all other geological students by helping to settle what has proved a vexatious question for the past half-century.

E. NUGENT.

Pottstown, Nov. 22, 1883.

From superstition to humbug.

Your editorial in the Nov. 16 issue of SCIENCE might very appropriately have contained an account of the 'magnetic springs' which underlie this portion of the state of Ohio. From my residence three of these springs may be seen, at one of which a large bath-house has already been erected, where, during the present season, an average of forty patients daily tested the curative effects of the waters. These springs are found along the bank of a small creek and at the base of a valley, perhaps twenty-five feet in depth. The water, which contains less than a sixth of one per cent of iron, is brought to the surface of the ground through an iron gas-pipe, and "becomes so highly charged with magnetism that it will impart its properties to a knife-blade." The village of Magnetic Springs, a few miles distant, has several large hotels, all of which are so crowded with guests, that rooms must be engaged weeks in advance. Change of residence, rest, and good nursing have together effected a number of cures, all of which, of course, are ascribed to the magnetic properties of the water. Many of the guests return to their home as disappointed as the little girl, who, after drinking a glass of the water, said, 'I do not feel one particle magnified, and I think these springs are a humbug.'

E. T. NELSON.

Delaware, O., Nov. 22, 1883.

Primitive visual organs.

The notice of Dr. Sharp's communication made before the Academy of natural sciences of Philadelphia, in No. 42 of SCIENCE [397], on the habits and on the peculiar visual organs of *Solen ensis* and *S. vagina*, between and at the base of the short tentacular processes along the external edge of the distal part of the siphons of these animals, reminds me that I have observed similar habits in other marine animals, and that possibly we may infer that similar